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| APPLICATION NO.  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 10/619,591   | 07/16/2003  | Shih-Hsien Wu        | 3313-1016P          | 7448             |
| 2292   | 7590        | 02/16/2005           | EXAMINER            |                  |
| BIRCH STEWART KOLASCH & BIRCH<br>PO BOX 747<br>FALLS CHURCH, VA 22040-0747 |             |                      | NADAV, ORI          |                  |
|  |             |                      | ART UNIT            | PAPER NUMBER     |
|  |             |                      | 2811                |                  |

DATE MAILED: 02/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                 |  |              |  |
|------------------------------|-----------------|--|--------------|--|
| <b>Office Action Summary</b> | Application No. |  | Applicant(s) |  |
|                              | 10/619,591      |  | WU ET AL     |  |
|                              | Examiner        |  | Art Unit     |  |
|                              | ori nadav       |  | 2811         |  |

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 10 December 2004.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-5, 7-18 and 20-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Berger et al. (6,528,145) in view Nishide et al. (5,827,605) and Zak (6,006,427).

Berger et al. in figure 3 and related text a composite laminate substrate, comprising:  
at least an inorganic substrate 20 having at least a wiring 26 formed thereon; and

two substrates, comprising print circuit boards (column 10, lines 32-45) located on two sides of said inorganic substrate, having circuits for electrical connections between outer input/output ports and said wiring of said inorganic substrate through said print circuit boards (substrates).

Berger et al. do not teach the print circuit boards being organic print circuit boards and at least a passive component formed on the inorganic substrate.

Nishide et al. teach in figure 1 and related text an inorganic substrate 1, 2 having at least a passive component 4, 5, 8 selected from a group consisting of capacitor, inductor and resistor, formed thereon, and circuits for electrical connections between outer input/output ports and said passive component of said inorganic substrate.

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Zak teaches print circuit boards being organic print circuit boards, and the advantages of using organic print circuit boards (column 2, lines 40-45).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use organic print circuit boards and at least a passive component formed on the inorganic substrate in Berger et al.'s device, such that two organic substrates, located on two sides of said inorganic substrate, having electrical connections between outer input/output ports and said passive component of said inorganic substrate through said organic substrates, in order to reduce the cost of making the device and in order to reduce the size of the device by forming the passive elements within the inorganic substrate, respectively.

Regarding claim 2, prior art teaches the material of said inorganic substrate is selected from the group consisting of ceramic, silicon and glass.

Regarding the process limitations recited in claims 3-4, 7-8, 11, 16-17, 20-21 and 24 ("passive component is made from the process selected from the group consisting of thick film process and thin film process", "passive component is made from a semiconductor fabrication process", "the circuit of the print circuit boards are made separately, and then stacked together to form said organic substrates, " the circuit of the print circuit boards are made separately, then stack the print circuit boards together, and finally form the circuit of a surface layer with build-up process to form said organic substrates", and "wherein said organic substrate is made on said inorganic substrate

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with build-up process”, .these would not carry patentable weight in this claim drawn to a structure, because distinct structure is not necessarily produced.

Note that a “product by process” claim is directed to the product per se, no matter how actually made, *In re Hirao*, 190 USPQ 15 at 17 (footnote 3). See also *In re Brown*, 173 USPQ 685; *In re Luck*, 177 USPQ 523; *In re Fessmann*, 180 USPQ 324; *In re Avery*, 186 USPQ 161; *In re Wertheim*, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); and *In re Marosi et al.*, 218 USPQ 289, all of which make it clear that it is the patentability of the final product per se which must be determined in a “product by process” claim, and not the patentability of the process, and that an old or obvious product produced by a new method is not patentable as a product, whether claimed in “product by process” claims or not. Note that the applicant has the burden of proof in such cases, as the above case law makes clear.

Regarding claims 9 and 10, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use at least a passive component on said organic substrate and selected from a group consisting of capacitor, inductor and resistor in prior art's device in order to the device in an application which requires a passive element.

Regarding claim 12, prior art teaches a covering layer, for covering said inorganic substrate, integrating with said organic substrate, and fully embedding said inorganic substrate in said the organic substrate, said covering layer further comprises circuits for

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providing electrical connections between said passive component and said organic substrate.

Regarding claims 13 and 25, Berger et al. teach a bonding layer (BGA) formed between said inorganic substrate and at least one of said organic substrate for bonding the two.

Claims 6 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Berger et al., Nishide et al. and Zak, as applied to claims 1 and 14 above, and further in view of Czjakowski et al. (6,613,978).

Berger et al., Nishide et al. and Zak teach substantially the entire claimed structure, as applied to claims 1 and 14 above, except each of said organic substrate is composed of a plurality of print circuit boards.

Czjakowski et al. teach a plurality of print circuit boards formed on a ceramic substrate. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to form each of said organic substrate of a plurality of print circuit boards, in the device of Berger et al., Nishide et al. and Zak, in order to use the device in an application which requires plurality of print circuit boards.

### ***Response to Arguments***

Applicant argues that none of the cited references teaches two organic substrates located on two sides of an inorganic substrate having at least a passive

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component thereon. Applicant further argues that the mere fact that one reference shows organic substrates and another shows inorganic substrate and a third that substrates can be either organic or inorganic does not in any manner suggest the specific arrangement of one inorganic substrate with two organic substrates on either side.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Furthermore, Berger et al. do not merely teach inorganic substrates. Berger et al. teach an inorganic substrate 20 having two print circuit boards (pcb) substrates located on two sides of said inorganic substrate. Berger et al. do not teach the composition of the pcb substrates. Zak teaches print circuit boards being organic print circuit boards, and Nishide et al. teach an inorganic substrate having a passive component formed thereon.

Applicant argues that an artisan would not be motivated to combine the references, because the examiner's suggestion to reduce the cost of making the device and to reduce the size of the device assumes the inventor's realization that these end results would be obvious as the examiner does not state any reason as to why it would be.

The cost of organic and inorganic print circuit boards is public knowledge and an artisan can calculate the production cost of making the device without assuming the inventor's realization. Furthermore, it is clear to an artisan that the integration of passive components within the inorganic substrate instead of forming them externally, reduces the size of the device.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.



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**Papers related to this application may be submitted to Technology center (TC) 2800 by facsimile transmission. Papers should be faxed to TC 2800 via the TC 2800 Fax center located in Crystal Plaza 4, room 4-C23. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The Group 2811 Fax Center number is (703) 308-7722 and 308-7724. The Group 2811 Fax Center is to be used only for papers related to Group 2811 applications.**

Any inquiry concerning this communication or any earlier communication from the Examiner should be directed to *Examiner Nadav* whose telephone number is **(571) 272-1660**. The Examiner is in the Office generally between the hours of 7 AM to 4 PM (Eastern Standard Time) Monday through Friday.

Any inquiry of a general nature or relating to the status of this application should be directed to the **Technology Center Receptionists** whose telephone number is **308-0956**

A handwritten signature in black ink, appearing to read 'Ori Nadav', with a stylized flourish at the end.

O.N.  
2/10/05

ORI NADAV  
PRIMARY EXAMINER  
TECHNOLOGY CENTER 2800